AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1.   (Currently Amended)   A multihop network (~~100, 400~~) comprising:
        a source node (~~102a, A~~);
        at least one neighboring node (~~102b, 102d, 102e, 102g, 102i, 102j, 102p, 102o, F and G~~);
        at least one active node (~~102f, 102h, 102k, 102l, B, C and D~~); and
        a destination node (~~102m, E~~), characterized by said nodes implementing a reactive routing protocol where a resource of the multihop network is adapted by one of the neighboring nodes or active nodes in response to a topology change in the multihop network to optimize the performance of a connection (106) between said source node and said destination node.

2.   (Currently Amended)   The multihop network of Claim 1, wherein said resource includes one or more of the following:
        a route (~~108~~);
        a channel; or
        <u>one or more</u> physical layer parameters.

3.   (Currently Amended)   The multihop network of Claim 1, wherein said topology change includes one or more of the following:
        <u>a</u> movement of one of the nodes;
        <u>one or more</u> quality variations in a channel between said source node and said destination node;
        <u>one or more</u> changes in traffic patterns in the multihop network;
        <u>one or more</u> changes in transmit patterns in the multihop network; or
        <u>one or more</u> changes in resource allocations in the multihop network.

4.   (Original)   The multihop network of Claim 1, wherein said one of the neighboring nodes or active nodes adapts the resource in an opportunistic manner in response to an instantaneous topology change in the multihop network.

5.   (Currently Amended)   The multihop network of Claim 1, wherein said one of the neighboring nodes or active nodes adapts the resource in a distributed manner where at least one of the neighboring nodes (F, G) is inserted into the connection between said source node and said destination node and where at least one of the active nodes (C, D) is removed from the connection between said source node and said destination node.

6.   (Currently Amended)   The multihop network of Claim 1, wherein said one of the neighboring nodes or active nodes adapts the resource in a distributed manner where at least one of the active nodes (C, D) is removed from the connection between said source node and said destination node.

7.   (Currently Amended)   The multihop network of Claim 1, wherein said one of the neighboring nodes or active nodes adapts the resource in a distributed manner to satisfy one or more of the following conditions:

meet a carrier to interference ratio;

ensure existing connections meet their carrier to interference ratios;

minimize aggregate power in the multihop network; and or

uses lowest cost to connect said source node and said destination node.

8.   (Currently Amended)   A method (200) for optimizing the performance of a connection (106) between a source node (102a, A) and a destination node (102m, E) in a multihop network (100, 400), said method characterized by comprising the steps of:

transmitting (202) a beacon (302) containing a measure of performance for the connection (106) from at least one active node (102f, 102h, 102k, 102l, B, C and D) associated with the connection between the source node and the destination node;

receiving (204) at least one of the transmitted beacons at at least one neighboring node (102b, 102d, 102e, 102g, 102i, 102j, 102p, 102o, F and G) associated with the connection between the source node and the destination node;

calculating (206) at said at least one neighboring node a cost function based on the measure of performance in each received beacon;

determining (208) at said at least one neighboring node whether the cost function for the connection between the source node and the destination node can be improved if said at least one neighboring node adapts at least one resource in the multihop network; and

   if yes, adapting (210) the at least one resource to improve the cost function for the connection between the source node and the destination node; or

   if no, maintaining (212) the at least one resource in the connection between the source node and the destination node.

9. (Original) The method of Claim 8, wherein each active node performs the receiving step, the calculating step, the determining step, the adapting step and the maintaining step.

10. (Currently Amended) The method of Claim 9, wherein said at least one resource includes:
  a route (108);
  a channel; or
  <u>one or more</u> physical layer parameters.

11. (Original) The method of Claim 9, wherein said adapting step includes inserting at least one of the neighboring nodes into the connection between the source node and the destination node and removing at least one of the active nodes from the connection between the source node and the destination node.

12. (Original) The method of Claim 9, wherein said adapting step includes removing at least one of the active nodes from the connection between the source node and the destination node.

13. (Currently Amended) The method of Claim 8, wherein said adapting step is performed when there is a topology change within the multihop network, said topology change includes:
  <u>a</u> movement of one of the nodes;
  <u>one or more</u> quality variations in a channel between the source node and the destination node;
  <u>one or more</u> changes in traffic patterns within the multihop network;
  <u>one or more</u> changes in transmit patterns within the multihop network; or
  <u>one or more</u> changes in resource allocations within the multihop network.

14. (Original) The method of Claim 8, wherein said at least one neighboring node adapts the at least one resource of the multihop network in an opportunistic manner in response to an instantaneous topology change in the multihop network.

15. (Currently Amended) The method of Claim 8, wherein each beacon includes a general broadcast part (312) and a connection related part (314) that contains the measure of performance which includes:

an accumulated cost for the connection between the source node and the destination node; or

a maximum allowed power for the transmitting active node.

16. (Currently Amended) A wireless multihop network (100, 400) that implements a reactive routing protocol to optimize the performance of a connection (106) between a source node (102a, A) and a destination node (102m, E), said wireless multihop network characterized by comprising:

at least one active node (102f, 102h, 102k, 102l, B, C and D) located in the connection between the source node and the destination node, wherein each active node performs the following step: transmitting (202) transmits a beacon (302) containing a measure of performance for the connection between the source node and the destination node; and

at least one neighboring node (102b, 102d, 102e, 102g, 102i, 102j, 102p, 102o, F and G) associated with the connection between the source node and the destination node, wherein each neighboring node performs the following steps: receiving (204) receives at least one of the transmitted beacons[[;]], calculates calculating (206) a cost function based on the measure of performance in each received beacon[[;]], and adapts adapting (210) at least one resource in the wireless multihop network if it is possible to improve the cost function for the connection between the source node and the destination node.

17. (Original) The wireless multihop network of Claim 16, wherein each active node performs the receiving step, the calculating step and the adapting step.

18. (Currently Amended) The wireless multihop network of Claim 16, wherein said at least one resource includes:

a route (108);

a channel; or

one or more physical layer parameters.

19.   (Original)   The wireless multihop network of Claim 16, wherein said adapting step includes inserting at least one of the neighboring nodes into the connection between the source node and the destination node and removing at least one of the active nodes from the connection between the source node and the destination node.

20.   (Original)   The wireless multihop network of Claim 16, wherein said adapting step includes removing at least one of the active nodes from the connection between the source node and the destination node.

21.   (Currently Amended)   The wireless multihop network of Claim 16, wherein each neighboring node performs the adapting step when there is a topology change within the wireless multihop network, said topology change includes:
    a movement of one of the nodes;
    one or more quality variations in a channel between said source node and said destination node;
    one or more changes in traffic patterns within the wireless multihop network;
    one or more changes in transmit patterns within the wireless multihop network;
or
    one or more changes in resource allocations within the multihop network.

22.   (Original)   The wireless multihop network of Claim 16, wherein each neighboring node performs the adapting step in an opportunistic manner when there is a real-time topology change within the wireless multihop network.

23.   (Original)   The wireless multihop network of Claim 16, wherein each beacon includes a general broadcast part and a connection related part that contains the measure of performance which includes:
    an accumulated cost for the connection between the source node and the destination node; or
    a maximum allowed power for transmitting active node.

24.   (Currently Amended)   A node (102b-102l, 102n-102g, B-D and F-G) which implements a reactive routing protocol (200) and adapts a resource within a wireless

multihop network (100, 400) in response to a topology change within the wireless multihop network (100, 400) to optimize the performance of a connection (106) between a source node (102a, A) and a destination node (102m, E).